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May 12, 2005

VIA ELECTRONIC FILING

Marlene H. Dortch, Secretary
Federal Communications Commission
The Portals
445 12th Street, S.W.
Washington, D.C. 20554

Re: WC Docket Nos. 04-36 and 03-251

Dear Ms. Dortch:

Nuvio Corporation (“Nuvio” or the “Company”) submits this letter to provide additional information to the Federal Communications Commission (“FCC” or “Commission”) concerning the provision of Voice over Internet Protocol (“VoIP”) 911 and E-911 services. Nuvio is a VoIP service provider, offering “NuvioVoice” VoIP service and “NuvioCentrex” (a PBX replacement service) for business customers. These services are offered over Nuvio’s managed network using the customer’s third-party provided broadband Internet connection and an Analog Telephone Adapter (“ATA”). The Company’s NuvioVoice and NuvioCentrex services allow residential and business customers to place VoIP “calls” locally and across the United States. However, unlike many other VoIP service providers, Nuvio’s IP network does not utilize time division multiplexing (“TDM”) elements.¹

Nuvio agrees with the Commission that public safety is of paramount concern. However, given the technological and regulatory impediments currently faced by nomadic VoIP providers, Nuvio believes that this issue can not be resolved over the period of several months. Moreover, the Company is concerned that rushed Commission action in this regard may be very harmful to the VoIP industry, especially those providers without the ability or resources to provide nationwide E-911 solutions. Should the Commission adopt such an order without establishing a concurrent requirement that incumbent local exchange carriers (“ILECs”) provide access to E-911 selective routers and other required 911 facilities, as well as requirements that they must route such traffic sent by VoIP providers, numerous VoIP providers will face substantial hurdles in order to meet such E-911 requirements, many of which would simply be unable to do so.

¹ Nuvio Corporation, *Technical Considerations of E911 in Pure IP VoIP Networks* (2005), is attached hereto as Attachment 1.

Unlike other VoIP providers, Nuvio does not maintain any TDM-based technologies on its network. From a customer's endpoint (e.g., an IP Telephone) until handoff to another carrier for termination, all Nuvio audio is transmitted and switched completely via IP. Accordingly Nuvio does not maintain native connections such as T1s, PRIs, or SS7 connectivity at any point to the traditional PSTN. Nuvio's purchases IP-based services from CLECs and IXCs in order to provide its customers connectivity with the PSTN. Nuvio simply routes IP packets from one IP address to another IP address; all PSTN connectivity is handled by independent CLECs and IXCs. Significantly, any VoIP E-911 mandate requiring the use of TDM infrastructure would require Nuvio to build out, at significant expense, outdated network elements it does not desire nor need for the provision of its VoIP services.

Nuvio currently is able to provide E-911 services to customers that have telephone numbers located in 55% of the rate centers currently served by Nuvio. Nuvio provides such services through a CLEC-sold product that includes E-911 functionality. Nuvio's E-911 service today permits the delivery of some VoIP calls to the selective router infrastructure and availability of ALI information for those calls to the PSAPs. To a PSAP these calls would appear to have the same characteristics as other wireline calls. However, this solution is limited in that it is not available when a customer's address is in a different location than the NPA-NXX that is assigned to them, and it does not provide for businesses that may have one telephone number serving users in different locations. Further, this service is currently only provided by a single CLEC operating in a subset of the rate centers in the United States, is only available in a subset of the rate centers served by the CLEC, and is not offered as a stand-alone product.

There are numerous different types of VoIP services, and different types of connections used in order for these services to operate. In a recent *ex parte* filing in the above-referenced docket, the National Emergency Number Association ("NENA") pointedly described a number of different potential problems and solutions for VoIP 911 services based on the technology and connection utilized by service providers and end-users.² For example, NENA noted that some "fixed" VoIP providers, such as cable companies, do not provide portable services. NENA noted that these types of service providers generally know the physical location of their end-users, are certificated by states, have interconnection agreements with ILECs, and thus can interconnect through direct trunks to the 911 routers, as well as access the relevant 911 database management systems.³

"Nomadic" services, however, are able to port their services to any location with a broadband Internet connection. NENA notes that "the nomadic model separates the application (in this case, voice conversations) from the physical transmission facility."⁴ NENA continues

² See *Ex Parte* Letter from James R. Hobson, Counsel for NENA, to Marlene Dortch, Secretary, Federal Communications Commission, WC Docket No. 04-36 (filed Apr. 15, 2005) (containing NENA's handout concerning different technical aspects of different VoIP services, and those different services' ability to provide E-911 service).

³ See *id.*, NENA Handout at 1.

⁴ *Id.*, Handout at 2.

that the nomadic nature of these services demonstrate that the service provider often does not know the physical location of the end user. NENA notes that another challenge is that VoIP service providers “have no rights to those 9-1-1 interconnections that are part of a standard ICA negotiated under the Telecommunications Act of 1996.” Importantly, NENA concluded:

Even if non-carrier interconnection were possible, it is not always cost-effective. The current 9-1-1 interconnection model uses dedicated circuit-switched “trunk-side” (intra-PSTN) access to 9-1-1 tandems (or “selective routers”). This is predicated on the old presumption that the serving switch was most likely proximate to the selective routing switch. With its use of the open public internet or wide-area private intranet as a transport medium – VOIP certainly shatters that location-based presumption. Consequently a small VoIP provider serving customers throughout the United States with a handful of diversely-located gateways might be economically hard-pressed to directly interconnect to the numerous 9-1-1 tandems throughout the country.⁵

Such differentiation must be a key element of any forthcoming VoIP E-911 Order. Unlike “fixed” VoIP providers, such as a cable or DSL provider that provides the last mile facility to the customer, Nuvio is in the business of provisioning service over third-party-provided broadband Internet connections. Nuvio identifies its users by the serial number associated with their computing device and their IP address, and is unable to determine the customer’s physical location based solely on an IP address.

NENA has recognized that different VoIP providers face distinctly different challenges in developing VoIP E-911 solutions. In a separate NENA-issued recommendation on VoIP access to E-911 services, NENA recognized that “[v]irtually all fixed application VoIP providers, *typically cable service based*, are already connecting to E9-1-1 through their -- or a vendor’s -- CLEC or CLEC-like connectivity.”⁶ NENA further stated that that depending on individual circumstances, different E-911 access options may be appropriate for different service providers. For example, NENA noted that “direct trunking from VoI provider equipment to Selective Routers may be the best choice. There is no guarantee that VoI equipment will be localized, across all potential VoI providers, of course.”⁷ NENA also recognized:

In more dispersed cases, other methods may be viewed as a better interim choice. Realistic timeframes for VoI providers and other parties to provide for the

⁵ *Id.*, Handout at 3.

⁶ See *Ex Parte* Letter from James R. Hobson, Counsel for NENA, to Marlene Dortch, Secretary, Federal Communications Commission, WC Docket No. 04-36, *See Ex Parte* Letter from James R. Hobson, Counsel for NENA, to Marlene Dortch, Secretary, Federal Communications Commission, WC Docket No. 04-36 (filed Apr. 15, 2005) (filed Apr. 21, 2005) (emphasis added).

⁷ *Id.*, at 3.

transmission and delivery of 9-1-1 calls and related data into E9-1-1 systems and on to the PSAPs are dependent on:

- technical and logistical factors associated with the various interconnection options, and
- whether the subscriber is using the service in a fixed location (including through a fixed base WiFi service), or in a nomadic fashion, and
- whether the subscriber's telephone number is being used in that number's assigned NPA and rate center, or in a 'foreign' NPA and rate center.”⁸

Finally, NENA concluded that timeframes for national solutions will necessarily be longer than those in individual local cases.⁹

Clearly, the interconnection rights provided to “fixed” VoIP providers allow those providers easier interconnection access to the 911 selective routers needed to provide E-911 services. On the other hand, “nomadic” VoIP providers, especially those offering services on a regional basis (but whose customers can port to any active broadband Internet connection), have no similar interconnection rights, no ability to access the selective routers needed to provide E-911 services, and therefore will face a much more difficult task in providing such services to their customers. This is especially true of VoIP services, such as Nuvio’s, that are marketed on a regional level as opposed to a nationwide level. Such services have limited numbers of PSTN gateways, but would essentially be required to directly interconnect with each and every PSAP in the United States in order to ensure that their customers are provided E-911 services in any place they may choose to port their service. As such, major cable companies offering fixed VoIP services will have a much easier time providing E-911 services to their customers, while smaller, nomadic VoIP providers will face enormous obstacles to provide such services.

Further, the Commission should address a major gap in the ILEC E-911 infrastructure: lack of IP methods of interconnection. Without such interconnection methods, VoIP providers offering VoIP products in a single market (i.e., those that my have direct inward dialing “DID” from one or limited rate centers), with mobile products, (i.e., services that can be ported to any active broadband Internet connection), could potentially have to interconnect directly with the thousands of PSAPs across the United States. This would clearly negate the reason for having to pass 10-digit numbers instead of 7-digit numbers to the ILECs’ selective routers. This would also require the use of pANI, architecture already in use by the wireless industry. Nuvio believes this will be a tremendous burden on many nomadic VoIP providers, especially those that offer VoIP services only on a regional basis.

A number of solutions have been advocated for solving the issue of letting VoIP calls into the E-911 selective router infrastructure. Some parties advocate interconnection with every

⁸ *Id.* at 3.

⁹ *See id.* at 3

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ILEC in the country for access to selective routers. However, there are currently no technical standards governing such interconnections. If such interconnection was based on dedicated legacy telecommunications facilities rather than the IP based communications over the public Internet, then service providers such as Nuvio that utilize 100% next generation IP based networks would be required to build out legacy TDM based telecommunications networks at a cost that would reach into the millions. It is also unclear what type of arrangements VoIP providers can obtain from incumbent LECs. While there has been many press reports concerning purported agreements between certain VoIP companies and incumbent LECs, there is no information concerning the details of such agreements nor is there any documentation available.

Finally, Nuvio is concerned that any forthcoming VoIP E-911 obligations may not be coupled with provisions governing limited liability. As the Commission is aware, ILECs and other wireline carriers enjoy state-based statutory protections concerning routing of 911 and E-911 calls, many of which simply alter the standard of liability applicable in cases involving the provision of 911 or E-911. Similarly, section 4 of the Wireless Communications and Public Safety Act of 1999 confers liability protection on CMRS carriers, users of wireless 911, and PSAPs engaged in wireless 911 that is not less than that of wireline carriers, users of wireline 911, and PSAPs engaged in wireline 911 under applicable state laws.¹⁰ Thus, both traditional wireline and wireless carriers have been afforded statutory protections limiting carrier liability. Nuvio believes similar protections must be established for VoIP providers obligated to provide E-911 services. Forcing VoIP providers to establish E-911 services, but not providing liability protections for those providers would afford traditional wireline and wireless carriers significant economic and competitive advantages. Not only would such carriers enjoy enhanced legal protections, they would also benefit from lower liability insurance coverage and other related costs.

Nuvio urges the Commission to undertake development of any VoIP E-911 obligations deliberately and thoughtfully. Differentiation between different types of VoIP providers, and the characteristics of their service offerings, should be highlighted by the Commission, and used in the development of E-911 regulations applicable to VoIP providers. Further, any forthcoming obligations applicable to nomadic VoIP providers must be accompanied by contemporaneous obligations on ILECs and other carriers to provide access to selective routers and other requisite 911 infrastructure, as well as specific obligations to carry and terminate all 911 calls received from VoIP providers. Finally, the Commission should ensure that any forthcoming VoIP E-911 obligations are coupled with appropriate liability protections.

¹⁰

See 47 U.S.C. § 615a.

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Pursuant the Commission's Rules, this letter is being submitted electronically for filing in the above-referenced proceeding.

Sincerely,

/s/
Ronald W. Del Sesto, Jr.

Counsel for Nuvio Corporation

cc: Jason P. Talley, Nuvio Corporation
Noah K. Wood, Nuvio Corporation